In The Claims:

1. (Currently Amended) An antenna for communication with a satellite, the antenna being for use on a satellite terminal, comprising:

a rotating plate for mechanically scanning for wave signals in the azimuth direction;

a plurality of radiation elements positioned on said ~~circular~~ rotating plate for electronically scanning for wave signals in elevation, said radiation elements forming respective element signals;

coding circuitry coupling a respective code to a respective one of the element signals to form respective coded element signals;

a multiplexer associated with said plurality of radiation elements for consolidating the coded element signals received at each of said plurality of radiation elements to an analog bit stream;

an analog to digital converter for converting said analog bit stream to a digital bit stream;

circuitry for forming multiple digital beams corresponding to respective coded element signals from said digital bit stream; and

a digital receiver determining signal strengths for the coded element signals ~~signal~~ and locking onto a strongest signal having a corresponding element, ~~said receiver causing a transmission using~~ so that the corresponding element can be used for transmission.

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- every element can be used for trans since ...

2. (Original) The antenna of claim 1, wherein said plurality of radiation elements are a plurality of parallel cross-slotted waveguides.

3. (Original) The antenna of claim 2, wherein each of said plurality of parallel cross-slotted waveguides includes a slotted septum therein.

4. (Original) The antenna of claim 1, wherein said circuitry for forming multiple digital beams does so through FFT techniques.

5. (Original) The antenna of claim 1, wherein said antenna may be utilized on a mobile vehicle.

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7. (Currently Amended) An antenna for communication with an equatorial satellite constellation, comprising:

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a rotating plate for mechanically scanning for a wavefront of wave signals in an azimuth direction;

a plurality of radiation elements positioned on said rotating plate for receiving the wave signals and generating respective element signals in response thereto;

coding circuitry coupling a respective code to a respective one of the element signals to form respective coded element signals;

apparatus for positioning said radiation elements such that the wavefront will be in alignment with a major axis of said plurality of radiation elements;

a multiplexer device being in communication with each of said plurality of radiation elements for converting said plurality of coded element signals into an analog bit stream;

an analog to digital converter for converting said analog bit stream to a digital bit stream;

a device for forming multiple digital beams from said digital bit stream; and

a digital receiver for processing said multiple digital beams to determine a corresponding element with a strongest signal strength, ~~said receiver causing a transmission using~~ so that the corresponding element can be used for transmission;

wherein the antenna is able to lock onto a second equatorial satellite in the constellation before ~~locking off~~ handing over from a first equatorial satellite.

8. (Original) The antenna of claim 7, wherein said device for forming multiple digital beam forms utilizes a FFT technique to provide for retrodirectivity.

9. (Previously Presented) The antenna of claim 7, wherein said antenna transmits said multiple digital beams to a plurality of satellites in the equatorial satellite constellation.

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10. (Original) The antenna of claim 8, wherein said plurality of radiation elements are a plurality of interdigitally spaced slotted wave guides.

11. (Original) The antenna of claim 7, wherein said rotating plate is generally circular in shape.

12. (Original) The antenna of claim 11, wherein each of said plurality of interdigitally spaced slotted waveguides includes a slotted septum therein.

13. (Previously Presented) A method for forming multiple beams at a satellite antenna comprising:

providing a plurality of radiation elements on a surface of said satellite antenna for receiving a plurality of individual wave signals and forming respective element signals;

rotating said plurality of radiation elements such that a wavefront of said plurality of individual wave signals is in alignment with a major axis of said plurality of radiation elements;

coding the respective element signals to form coded element signals;

consolidating said plurality of coded element signals into an analog signal;

forming multiple beams from said analog signal;

determining signal strengths for the coded element signals and determining a strongest signal of the signal strengths and a corresponding element, and

transmitting a transmit beam using the corresponding element.

14. (Previously Presented) The method of claim 13, further comprising:

converting said single analog signal to a digital bit stream; and

forming multiple digital beams from said digital bit stream.

15. (Previously Presented) The method of claim 14, further comprising:

utilizing FFT techniques to form said multiple digital beams to provide for satellite retrodirectivity.

16. (Previously Presented) The method of claim 14, further comprising:

processing said multiple digital beams prior to transmitting.

17. (Original) The method of claim 14, wherein said plurality of radiation elements electronically scan for said wave signals in elevation.

18. (Original) The method of claim 17, wherein said surface of said antenna is comprised of a generally circular plate that rotates for scanning mechanically for said wave signals in azimuth.

19. (Original) The method of claim 18, wherein said plurality of radiation elements are a plurality of cross-slotted waveguides.

20. (Original) The method of claim 19, wherein said plurality of cross-slotted waveguides are parallel and interdigitally spaced with respect to each other.

21. (Currently Amended) A phased array antenna for communication with an equatorial satellite constellation, comprising:

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a rotating plate for electronically scanning for a wavefront of wave signals in elevation and for mechanically scanning for said wavefront of wave signals in an azimuth direction;

a plurality of elongated radiation elements positioned on said rotating plate for receiving the wave signals and generating elements signals in response to the wave signals, each of said plurality of radiation elements having a major axis and a minor axis;

apparatus associated with said plurality of radiation elements for coding the elements signals according to location to form coded elements signals and consolidating the coded element signals received at each of said plurality of radiation elements into a first bit stream;

a multiple beam former for forming multiple beams from said first bit stream; and

a receiver for determining a corresponding element with a strongest signal strength, ~~said receiver causing a transmission using~~ so that the corresponding element can be used for transmission.

22. (Previously Presented) The antenna of claim 21, further comprising:

a converter for converting said first bit stream from an analog bit stream to a digital bit stream, which digital bit stream is received by said multiple beam former.

23. (Previously Presented) The antenna of claim 21, wherein each of said plurality of elongated radiation elements are cross-slotted waveguides, which are aligned parallel to one another on the antenna.

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24. (Previously Presented) The antenna of claim 23, wherein each of said plurality of radiation elements includes a slotted septum therein.

25. (Previously Presented) The antenna of claim 21, wherein the antenna may be utilized on a mobile vehicle.

26. (Previously Presented) The antenna of Claim 21, wherein said apparatus for coding and consolidating the wave signals comprises a multiplexer.

27. (Previously Presented) The antenna of claim 26, wherein said multiplexer is a code division multiplexer.

28. (Previously Presented) The antenna of claim 21, wherein the antenna is configured with a low profile.

29. (Previously Presented) The antenna of claim 21, wherein the antenna is in communication with a commercial satellite terminal.

30. (Previously Presented) A method of communicating with an equatorial satellite constellation, comprising:

providing a plurality of generally parallel waveguide elements on a surface of a satellite antenna;

rotating said satellite antenna such that a wavefront of a wave signal is in alignment with a major axis of said plurality of waveguide elements;

forming a plurality electrical waveguide signals;

consolidating said plurality of electrical waveguide signals into a digital bit stream;

forming multiple beams from said bit stream;

determining a strongest beam and corresponding waveguide;

transmitting a transmit beam to a satellite in the equatorial satellite constellation using the corresponding waveguide.

31. (Previously Presented) The method of claim 30, further comprising:

mechanically scanning a field of view for said wave signals in azimuth.

32. (Previously Presented) The method of claim 31, further comprising:

electronically scanning said field of view for said wave signals in elevation.

33. (Previously Presented) The method of Claim 30, further comprising:

forming multiple digital beam forms from said digital bit stream.

34. (Previously Presented) The method of claim 33, further comprising:

utilizing FFT techniques to form said multiple digital beam forms to provide for satellite retrodirectivity.

35. (Previously Presented) The method of claim 31, further comprising:

providing seamless handover from one satellite to another without interruption.

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36. (Previously Presented) The method of Claim 31, further comprising:

monitoring signal strength from an adjacent wave signal in order to track other satellites in the equatorial satellite constellation.

37. (Previously Presented) A satellite terminal for communication with an equatorial satellite constellation comprising:

an antenna including,

a one-dimensionally rotating plate for mechanically scanning for wave signals in the azimuth direction;

a plurality of elongated waveguide elements having a predetermined location positioned generally parallel to one another on said plate for electronically scanning for wave signals in elevation, said waveguide forming an electrical waveguide signal in response to the wave signals;

coding circuitry coupling a respective code to a respective element signal to form respective coded waveguide signals;

a multiplexer associated with said plurality of waveguides for consolidating the waveguide signals received at each of said plurality of waveguides to a first bit stream;

a multiple beam former for forming multiple beams from said first bit stream;

a receiver for determining a strongest waveguide signal strength from a corresponding waveguide, said receiver causing a transmission using the corresponding waveguide.

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